

Application No.: 10/776152

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REMARKS

Claims 1, 2, 5, 7, 9-12, 14-16, 19, 20, 26, 29 and 34-53 are pending. Reconsideration of the present application in view of the following remarks is respectfully requested.

§ 103 Rejections

Claims 1, 2, 4, 5, 7, 9-12, 14, 16, 19, 20, 26, 34-45 and 47-53 stand rejected under 35 USC § 102(b) as being unpatentable over Handschy US 6,038,005 ("Handschy") in view of Magarill US 5,625,738 ("Magarill"). The Applicant respectfully traverses this rejection. As the Examiner knows, in order to establish a prima facie case of obviousness, three basic criteria must be met. (See MPEP 706.02(j) and MPEP§ 2143). First, there must be some suggestion or motivation in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be reasonable expectation of success. And third, the prior art references must **teach or suggest all of the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must **both** be found in the prior art. The teaching or suggestion to make the claimed combination must not be based on applicant's disclosure.

Independent claim 1 requires that "the system of optical elements **images** the emitting surfaces of the light source modules onto the entrance of the light tunnel." Neither Handschy nor Magarill disclose or suggest this limitation. Photonics dictionary provides the following definition of the term "image":

A reproduction of an object produced by light rays. An image-forming optical system gathers a beam of light diverging from an object point and transforms it into a beam that converges toward or diverges from another point, thus producing an image. If the beam converges to a point, a real image is produced; if the beam diverges, a virtual image is produced at its apparent source.

As it would be readily apparent to those of ordinary skill in the art, under the above definition, emitting surfaces of the light source modules serve as objects and, as required by claim 1, the

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system of optical elements produces images of the emitting surfaces at the entrance of the light tunnel.

In contrast, Handschy describes forming a real image of the light source(s) at a source imaging area 62, shown in FIG. 4. The Examiner has found that Handschy shows, in FIG. 4, an illumination target 46. However, no images of the light sources are formed at 46. Instead, as shown in FIG. 4 and described, for example, in col. 7, lines 10-13, and col. 10, lines 29-45, light illuminating the spatial light modulator 46 is collimated. Magarill also does not teach or suggest an illumination system wherein "the system of optical elements images the emitting surfaces of the light source modules onto the entrance of the light tunnel," as required by the independent claim 1. Therefore, the cited references do not teach all limitations of independent claim 1.

Further, the Applicants respectfully submit that it would not be obvious for a person of ordinary skill in the art to modify the teachings of the references to arrive at the subject matter of the pending claims. The references contain no motivation for the combinations and modifications as suggested by Examiner or a reasonable expectation of success. For example, there is no indication or suggestion that the disclosures of Handschy and Magarill could be modified to image the emitting surfaces onto the entrance of the light tunnel or that such could be desirable. In addition, a person of ordinary skill in the art would not be motivated to replace the spatial light modulator 46 with an integrating light tunnel of Magarill. Such combination would have no practical purpose and, furthermore, would destroy the main purpose of the systems described in Handschy, which is to modulate light.

For at least the foregoing reasons, independent claim 1 is patentable over the cited references. Dependent claims 2, 4, 5, 7, 9-12, 14, 16, 19, 20 and 26 are patentable for at least these as well as additional reasons.

Independent claim 34 requires that "the system of optical elements **images** the emitting surfaces of the light source modules onto the image-forming device." As explained above, neither Handschy nor Magarill disclose or suggest this limitation. In contrast, Handschy describes forming a real image of the light source(s) at a source imaging area 62, shown in FIG. 4, and no images of emitting surfaces are formed at the spatial light modulator 46. As shown in FIG. 4 and described, for example, in col. 7, lines 10-13, and col. 10, lines 29-45, light

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illuminating the spatial light modulator 46 is collimated. Therefore, the cited references do not teach all limitations of independent claim 34.

Further, the Applicants respectfully submit that it would not be obvious for a person of ordinary skill in the art to modify the teachings of the references to arrive at the subject matter of the pending claims. The references contain no motivation for the modifications as suggested by Examiner or a reasonable expectation of success. For example, there is no indication or suggestion that the disclosure of Handschy could be modified to image the emitting surfaces onto the spatial light modulator instead of the image viewing area, or that such could be desirable. Furthermore, with such modifications, the systems described in Handschy would not work as intended.

For at least the foregoing reasons, independent claim 34 is patentable over the cited references. Dependent claims 35-45 and 47-53 are patentable for at least these as well as additional reasons.

Claim 29 stands rejected under 35 USC § 102(b) as being unpatentable over Handschy and Magarill and further in view of McClelland US 6,201,629 ("McClelland"). The Applicant respectfully disagrees. None of the references teach all elements of claim 29. For example, none of the references teach an illumination system including "a plurality of light source modules disposed in an array within a non-radially symmetrical aperture" and configured such that "the non-radially symmetrical aperture has a long dimension and a short dimension and is oriented so that the long dimension is aligned with the pivot axis of the mirrors of the image-forming device."

McClelland is directed to a torsional micro-mechanical mirror system, but it does not disclose or suggest an **illumination system** wherein a plurality of light source modules is disposed within a non-radially symmetrical aperture having a long dimension and a short dimension. The Examiner argues that because a simple mirror is mentioned in the abstract of Handschy, it would be obvious to combine the references. The Applicants respectfully disagree and submit that a simple mirror has a completely different structure, purpose and location in the optical system as compared to a torsional micro-mechanical mirror system. Therefore, a person of ordinary skill in the art would not be motivated to replace one with the other.

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The Examiner also argues that the micro-mirrors of McClelland have apertures with a short dimension and a long dimension. However, claim 29 requires that it is the non-radially symmetrical aperture within which the light source modules are disposed that has the long dimension and the short dimension – not the mirrors themselves. Furthermore, the claim requires that the long dimension of the non-radially symmetrical aperture (within which the light source modules are disposed) be aligned with the pivot axis of the mirrors. None of these limitations are disclosed in Handschy, Magarill or McClelland, and the requisite motivation to modify the cited references to arrive at the present invention and reasonable expectation of success are absent. Therefore, claim 29 is patentable over the cited references.

With regard to the Examiner's rejection of claims 45 and 46, Handschy does not disclose the additional limitations of claims 45 or 46. The sets of light sources 52 and lenses 60 are both clearly disposed in a planar arrangement such that the principal rays of the light sources and their respective lenses are collimated when exiting the set of lenses 60 and when incident onto the spatial light modulator 46. Therefore, Handschy does not disclose or suggest aimed-in channels, as required by claims 45 and 46.

Anderson also does not disclose channels aimed substantially into the image-forming device. Instead, in Figs. 6 and 7, Anderson shows light emitting elements that have principal rays intersecting at a point F that is taught to be in the vicinity of the holographic diffuser 16 and not the image-forming device. Therefore these light sources and associated optics do not form channels aimed substantially into the image-forming device. In addition, the requisite motivation to combine the cited references and reasonable expectation of success are absent. Thus, claims 45 and 46 are not obvious over the cited references.

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In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is respectfully requested. Allowance of claims 1, 2, 4, 5, 7, 9-12, 14-16, 19, 20, 26, 29 and 34-53, as amended, at an early date is earnestly solicited.

Respectfully submitted,

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